

# The National Institute for Occupational Safety and Health (NIOSH)

Promoting productive workplaces  
through safety and health research 

## NIOSH eNews



Director's  
Desk



Research  
Rounds



Highlights



Monthly  
Features

Volume 18, Number 6 (October 2020)

## From the Director's Desk

John Howard, M.D. Director, NIOSH

### NIOSH's Dedication to Ensuring Effective Respiratory Protection

NIOSH's annual Respiratory Protection Week observance last month was an opportunity for us to recognize all the workers who rely on respiratory protection to keep them safe. NIOSH researchers strive to provide the science necessary to inform difficult respiratory protection decisions. These efforts are not new, although respiratory protection has never been such a trending topic. One example, included in this issue of *Enews* under [Research Rounds](#), is the NIOSH testing of air-purifying respirators equipped with chemical, biological, radiological, or nuclear canisters to ensure that first responders are protected in emergencies.

Last year, we celebrated 100 years of respiratory protection, appreciating both its history and recognizing NIOSH's role in its evolution. This year, we have been *making* history, at an unprecedented pace, building upon the knowledge established in the last century.

Typically, NIOSH makes 400 respirator approval decisions per year. As of September 1, we had already made 574 (468 granted, 106 denied) respirator approval decisions, including 64 filtering facepiece respirators and 52 powered air purifying respirators just being brought to market. In addition, NIOSH approved 681 new configurations of elastomeric air purifying respirators with N95 minimum particulate protections.



NIOSH's Respiratory Protection Week, held September 8-11, recognized workers who rely on respiratory protection.

In response to the increased need for respiratory protection during COVID-19, NIOSH met the challenge to assess unique respirators. Among these are respirators beyond their shelf life or stockpiled, respirators assessed for their ability to remain compliant after decontamination processes, and respirators entering the United States from countries claiming to meet a non-NIOSH standard.

As a result, NIOSH completed a range of assessments:

- 27 respirator models for use beyond their shelf life.
- 1,199 respirators that have undergone a decontamination process, representing 27 respirator models and 13 types of decontamination methods from 32 separate assessments.
- 5,829 international respirators, which equated to 410 completed test requests.

NIOSH pivoted our research portfolio to address research questions of high national importance associated with COVID-19. One topic not on our radar prior to COVID-19 is the use of respirators with exhalation valves. We know these respirators provide the proper respiratory protection, but now we are challenged with questions regarding their applicability as source control devices. Our researchers are working hard to answer these questions and many more.

This has been a busy year. However, we are more dedicated than ever to applying the best scientific approach to determine the most effective respiratory protection practices, to innovate respirator designs, and to maximize the availability of respiratory protection.

To learn more about our respiratory protection work please go to our [web page](#).

## Research Rounds

### Inside NIOSH: New Process Identifies Hazards to Assess Respirator Canisters' Protection

Air-purifying respirators (APR) equipped with chemical, biological, radiological, or nuclear (CBRN) canisters protect emergency responders from hazards during emergency response activities. The canisters undergo NIOSH approval testing using 11 chemicals, called test representative agents, originally identified in 2001 from seven chemical families.

We asked lead author Lee Greenawald, NIOSH physical scientist, to explain a recent hazard assessment study of CBRN canisters, reported in the *Journal of Occupational and Environmental Hygiene* [link](#).

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Q: Why did you do this study?

A: Since new chemicals continually emerge, canisters must protect against changing hazards. NIOSH sought to update its CBRN hazards list to ensure its CBRN test representative agents are still adequate to represent all potential hazards, and the canisters continue to protect the user.

Q: How did you do the study?

A: Working with the U.S. Departments of Defense and Homeland Security, we reviewed recent hazard assessments to identify emerging chemical or radiological agents that could pose a risk to emergency responders. We then developed a systematic process to group hazards into chemical families and assess the canister's protectiveness.

Q: What did you find?

A: We identified 237 hazards (191 chemicals and 46 radiologicals). We grouped 203 of the 237 hazards into one of the seven chemical families; the others were considered too unstable and irrelevant to emergency responders. A review of each hazard showed that the current 11 CBRN test representative agents should remain the basis for approval testing; thus, it wasn't necessary to update the NIOSH CBRN standards for air purifying respirators. We did identify five chemicals for additional testing.

Q: What is the next step?

A: The systematic process developed can be used as the standard process for evaluating CBRN canister protection against emerging hazards. We plan to update NIOSH's CBRN APR documentation to reflect these newly identified hazards that CBRN canisters protect against.

More information is available:

- [NIOSH CBRN Respiratory Protection Handbook](#)
- [NIOSH: Respirator Fact Sheet](#)

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## Outside NIOSH:

### Portable Air Cleaners: Making Indoor Work Safer During Wildfires

The wildfire season continues to increase in severity and length, especially out West. Wildfire smoke is dangerous and contains chemicals and mostly fine particulate matter or PM<sub>2.5</sub>. This harmful substance can stay in the air for long periods, and people can inhale it deep into their lungs. Studies show PM<sub>2.5</sub> is linked to systemic inflammation and disorders that affect the heart and lungs. It is also associated with increases in death.

During a wildfire, public health recommendations include use of an indoor portable air cleaner, which removes particulate matter from rooms by moving air through a filter. Studies show this type of device can decrease concentrations of PM<sub>2.5</sub> in homes caused by smoke from wildfires. However, limited information exists on exposure to wildfire-sourced PM<sub>2.5</sub> in office settings—an environment that can greatly differ from a home. NIOSH-funded researchers at Montana Technological University addressed this issue, focusing on the device's effectiveness in decreasing PM<sub>2.5</sub> in offices and exploring associations between outdoor and indoor PM<sub>2.5</sub> concentrations during wildfires.

Reported in the [Journal of Occupational and Environmental Hygiene](#), the study found PM<sub>2.5</sub> levels in offices were like those reported outside by a local National Ambient Air Quality Standards monitoring station during a wildfire in the Pacific Northwest. However, the portable air cleaner reduced the amount of PM<sub>2.5</sub> by 73% during working hours and 92% during nonworking hours. During wildfire season, scientists compared two identical offices—one with the device and one without it. They also

developed a method to improve their measuring instruments by correcting for overestimated PM<sub>2.5</sub> levels. These findings show that indoor work environments, such as offices, can have high PM<sub>2.5</sub> levels during wildfires but using a portable air cleaner can minimize the problem and protect health.

## Highlights

### COVID-19 Update

As part of NIOSH's efforts to keep our stakeholders up to date on the CDC and NIOSH COVID-19 response, below is a summary of new information posted:

- A recent NIOSH Science Blog Post, [The COVID-19 Pandemic and the Opioid Overdose Epidemic: A Perfect Storm for Workers?](#), discusses the interlinked nature of the COVID-19 and opioid misuse, opioid use disorder, and overdose. More information is available.
- The new challenges and stressors workers face during the pandemic may lead to an increase in substance use.
- NIOSH Extramural Research and Training Programs. Training Project Grants
- CDC has published a new webpage on [Optimizing Personal Protective Equipment \(PPE\) Supplies](#). This resource provides links for strategies to optimize the supply of various types of PPE, as well as general PPE information.
- A new infographic on [COVID-19 Case Investigation and Contact Tracing in Nonhealthcare Workplaces](#) is available. When a COVID-19 case is identified that impacts a workplace, the health department may ask the employer for help. This infographic provides tips for employers if they are asked to assist a health department with case investigations and contact tracing.

### National Occupational Injury Research Symposium (NOIRS) Papers Available in the Journal of Safety Research

A special issue of the [Journal of Safety Research](#), featuring select papers from NOIRS 2018, is now available. Open

access to this issue will continue through March 2021. Topics include the leading causes of occupational injury, cross-cutting issues such as organizational-based prevention, and emerging issues associated with advancements in technology, as well as other occupational safety and health topics. The next NOIRS is scheduled for October 19–21, 2021.

### **NIOSH Center for Motor Vehicle Safety Strategic Plan, 2020–2029**

The NIOSH Center for Motor Vehicle Safety's (CMVS) [strategic plan](#) for 2020–2029 is now available. The plan identifies research needs for four priority industry sectors and describes how we envision those stakeholders will put research results into practice. The purpose of the strategic plan is to guide NIOSH-funded research to prevent work-related motor vehicle crashes—the leading cause of workplace deaths in the U.S.—and encourage collaboration between the CMVS and external partners.

### **NIOSH Seeks Input on Distribution and Use of Elastomeric Half Mask Respirators in Healthcare**

NIOSH, in coordination with the Strategic National Stockpile, posted the Federal Register Notice (FRN) [A National Elastomeric Half Mask Respirator \(EHMR\) Strategy for Use in Healthcare Settings During an Infectious Disease Outbreak/Pandemic](#). EHMRs are reusable respirators that may be worn in a healthcare setting. They can supplement the supply of disposable respirators available to healthcare workers. Through this FRN, NIOSH is seeking input about the national distribution plan of purchased EHMRs, as well as identifying potential organizations interested in receiving some of these EHMRs in exchange for a report of user acceptability and feasibility of implementation. Comments must be received by October 14.

### **Special Virtual Session: COVID-19 & Occupational Safety and Health**

The XXII World Congress on Safety and Health at Work International Organizing Committee is offering [free virtual sessions](#) on COVID-19 and occupational safety and health. These virtual events will be on October 5, 9 a.m. to 12 p.m. (EST), and October 6, 8 a.m. to 11 a.m. (EST). The sessions will feature thought leaders discussing emerging innovations to address COVID-19 in the workplace, how the future of work is being shaped by the global pandemic, and the relevance of promoting a culture of prevention to address COVID-19.

### **NIOSH Congratulates**

#### *NIOSH Director Receives President's Award*

The [International Association of Industrial Accident Boards and Commissions](#) (IAIABC) presented the Samuel Gompers Award to NIOSH Director Dr. John Howard. IAIABC presents awards to those who are committed to reducing occupational injuries and illnesses. Dr. Howard's distinguished career at NIOSH focuses on improving occupational safety and health for American workers. The award specifically recognizes that under his leadership, NIOSH launched the Center for Workers' Compensation Studies seeking to encourage collaboration and data sharing across public health and workers' compensation agencies at the state and federal levels.

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## Monthly Features

## New Communication Products & Reports

### FACE Reports

- [Pipefitter Struck by Pressurized Pipe and Killed—Oregon](#)
- [Farmer Pinned by Tree Limb when Tree Shifted While Limbing/Bucking Tree—Michigan](#)
- [Farmer Driving a Pickup Truck Was Struck when a Pickup Ran a Stop Sign—Michigan](#)

## Firefighter Fatality Investigation and Prevention Program Report

- [One Firefighter Killed and Two Firefighters Injured in Fire Apparatus Crash—Mississippi](#)

## Health Hazard Evaluation Report

- [Evaluation of Metals Exposure in an Architectural Metal Fabrication Shop](#) 

## NIOSH Science Blog

- [Labor Day 2020: Statement by John Howard, M.D., Director, NIOSH](#)
  - [Respiratory Protection vs. Source Control—What’s the Difference?](#)
  - [Supplementing the Supply of N95s With Reusable Elastomeric Half Mask Respirators](#)
  - [Partnering to Prevent Suicide in the Construction Industry—Building Hope and a Road to Recovery](#)
  - [Statement by Dr. John Howard on the September 11th National Day of Service and Remembrance 2020](#)
  - [The COVID-19 Pandemic and the Opioid Overdose Epidemic: A Perfect Storm for Workers?](#)
  - [Protecting Machine Operators From Silica Dust: Enclosed Cabs](#)
  - [Rising to the Challenges and Opportunities Presented by the Future of Work: NIOSH Introduces Its Future of Work Initiative](#)
  - [Wildland Firefighter Health: Some Burning Questions](#)
  - [The Unique Occupational Environment of the Home Healthcare Worker](#)
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## Federal Register Notice

### **A National Elastomeric Half Mask Respirator (EHMR) Strategy for Use in Healthcare Settings During an Infectious Disease Outbreak/Pandemic**

The [notice](#)  was posted on September 14. Comments must be received by October 14.

### **Research Project to Evaluate and Control Hazards to Landscaping and Grounds Management Workers; Request for Participants**

The [notice](#)  was posted on January 10. Letters of interest must be received by October 16.

### **Advisory Board on Radiation and Worker Health (ABRWH); National Institute for Occupational Safety and Health (NIOSH)**

The [notice](#)  was posted on August 19. The meeting will be held on October 27.

### **Advisory Board on Radiation and Worker Health (ABRWH), Subcommittee on Dose Reconstruction Reviews (SDRR), National Institute for Occupational Safety and Health (NIOSH)**

The [notice](#)  was posted on September 21. Comments must be received by October 28. The meeting will be held on November 4.

## Mine Safety and Health Research Advisory Committee (MSHRAC) Meeting

The [notice](#) was posted on September 24. The meeting will be held on November 9.

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## National Occupational Research Agenda (NORA)

### Ergonomic Guidance Documents Repository Available

The NORA Musculoskeletal Health Council posted a list of ergonomic guidance documents on the International Ergonomics Association [website](#). The list links to more than 100 documents with interventions for reducing the risk factors for workplace musculoskeletal disorders. Information on these activities will be presented at the Human Factors and Ergonomics Society [annual meeting](#) being held virtually October 5–10.

### Faces of Work-related COPD Video Series Featured in Film Festival

The video series [Faces of Work-related COPD](#), released by the NORA Respiratory Health Cross-sector Council in 2019, has been selected for screening during the American Public Health Association (APHA) Film Festival. The festival takes place during the APHA 2020 virtual Annual Meeting and Expo, October 24–28. Viewing will be on demand before and during the annual meeting.

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## News from Our Partners

### Health Communication, Marketing, and Media Forum

The CDC will hold a multiday, online health communication, marketing, and media forum, on October 6-8, from 1:00 p.m. to 3:00 p.m. EDT daily. Panel session topics include health equity and social justice issues, along with a session about how misinformation about the coronavirus begins, spreads, and can be effectively addressed. Visit the forum [website](#) to learn more.

### New 2019 Annual Report on Work-related Deaths in Washington State

The Washington Fatality Assessment and Control Evaluation (WA FACE) program recently published its [2019 Washington State Work-related Fatalities Report](#). According to the report, motor vehicle incidents topped the leading cause of work-related deaths, followed by homicides. The construction industry had the highest number of workplace fatalities. In Washington, the Safety and Health Assessment and Research for Prevention (SHARP) Program oversees FACE as part of the NIOSH-funded [state surveillance program](#). You can find a summary of the report on the SHARP [webpage](#).

### New Publications Available on *Total Worker Health*<sup>®</sup>

See the latest journal articles from the NIOSH-funded Centers of Excellence for *Total Worker Health*<sup>®</sup>:

- [Bidirectional Relationships of Sleep and Work](#)
- [Designing a Participatory Total Worker Health Organizational Intervention for Commercial Construction Subcontractors to Improve Worker Safety, Health, and Well-being: The “ARM for Subs” Trial](#)
- [Work Environment Factors and Prevention of Opioid-related Deaths](#)

You can also learn more about the Centers of Excellence on the [NIOSH extramural research and training programs page](#).

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## Conferences, Meetings, Webinars, & Events

This page provides a list of publicly available occupational safety and health related [conferences, meetings, webinars, and events](#) sponsored by NIOSH as well as other government agencies, and nongovernment agencies, such as universities, professional societies, and organizations.

## Follow NIOSH

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